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Bill M ✓

29 August 1963

MEMORANDUM FOR: Assistant for Plans and Development *JWC*
THROUGH : Chief, Development Branch *W3M*
SUBJECT : Report on Pre-Shipment Inspection of Precision 3X-6X-12X Enlarger *Boeing*

25X1A 1. The subject enlarger was designed, developed and fabricated by
25X1A [REDACTED] under Contract [REDACTED] dated 27 June 1962. Pre-shipment inspection of the enlarger was made on the dates of 22 and 23 August 1963.

25X1A 2. The initial contract price was in the amount of [REDACTED] B5X1A letters of 27 May 1963; 25 June 1963 and 19 July 1963, overrun requests were submitted, but not yet granted, that would raise the total contract price to [REDACTED] These overrun requests are the subject of a separate memorandum of this same date.

25X1A 3. Purpose of Enlarger Development - The prime purpose for development of the subject enlarger was to satisfy a requirement for an on-axis* precision photographic enlarging capability in the range below that provided by the [REDACTED] 10X-20X-40X precision enlarger.

4. Enlarger Description:

Components - The enlarger is designed in a vertical configuration with a capability of printing out a 70mm square negative area at all settings. Its principle components are:

- a. a reinforced sheet-steel base with five (5) legs.
- b. a thick-walled stainless steel vertical tube of four (4) inch diameter.
- c. a horizontal support arm moveably attached to the vertical tube.
- d. an enlarger head mounted on the horizontal support arm, with a remote exhaust fan.
- e. a remote control console
- f. a vacuum easel with remote pump
- g. a drive unit for vertical motions.

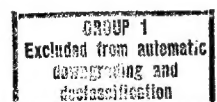
25X1A All of the above except items (d) and (f) are standard units employed in the [REDACTED] Model 1088M, 35mm Microfilm Camera. Each was modified to some extent.

25X1A * The only in-house precision enlarger other than [REDACTED] 10-20-40X unit is the
25X1A [REDACTED] VG-1. Its range however is .75 to only 7 diameters. Furthermore, enlargements from targets at the edge of film frames are off-axis and project off the easel. Hence the unit, although of high quality, is limited to this extent.

Declass Review by NIMA / DoD

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Enlarger Head - The enlarger head is of box-like rectangular configuration and is constructed of aluminum plates and sheets. It employs a condenser system with folded optics, a G.F.E. [REDACTED] 105mm lens, and is provided with four interchangeable and focusable light sources. These are:

- a. 100 watt Osram (Pinpoint)
- b. 85 watt G.E. UV
- c. 75 watt Projection
- d. 500 watt projection

Cooling of the light sources is accomplished effectively by a remote air blower through a flexible tube to the lamp house.

Focusing - Focusing is designed to be autofocus by means of a long cam attached to the vertical tube and interconnected to the lens carriage by means of a roller arm and a coarse rack and gear segment. Focusing can only be accomplished from the console. Stops are provided at 3X, 6X and 11 3/4X enlargement. A steel tape enlargement scale is provided on the vertical column.

Vacuum Easel - The easel is a 42 x 42 inch square sheet of semi-rigid material approximately 5/8 inch thick with five (5) 3/16 inch wide air vacuum channels, the smallest being 10 x 10 inches. Each channel is separately controllable through solenoid valves operated from the control console. Vacuum is provided by a simple remote 1/3 h.p. pump with no accumulator tank. The easel is supported from the enlarger base by fourteen (14) adjustable bolts intended to facilitate adjustment of the easel surface to flatness.

5. Inspection - The inspection was conducted with full consideration that the subject enlarger was intended to fulfill a specific requirement in an exploitation community where precision and quality of results cannot be compromised. It was expected that the highest quality of design, engineering and workmanship should be reflected in the unit. The inspection and tests were limited by the time available and by the lack of test facilities at the contractor's plant.

6. Inspection Findings:

a. Fixed Stops. Fixed 3X - 6X - 11 3/4X stops provided were of no value because the stopping point was never the same. Design of the stopping mechanism ([REDACTED] standard for other equipment) could never provide a consistent stopping point. [REDACTED] stated that the system employed could not be adjusted to provide accurate stops.

b. Enlarging Scale Tape. The scale provided for indication of the degree of enlargement and its pointer were not accurate. An operator could never be sure of the exact enlargement.

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